TREES MAGAZINE

A Beautiful Specimen of Flowering Ash (Fraxinus Ornus) in Full Bloom at Kew

Western Chapter – National Shade Tree Conference – Long Beach, Cal., May 8-11

Insect Pests of Trees in Midwest — ***Hugh E. Thompson***

Branches of the Law — ***Howard Newcomb Morse***

March-April, 1960 *The Journal of American Arboriculture* Vol. 20, No. 3

America's Favorite Spring Tonic—

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GUARANTEED TO REJUVENATE YOUR COMMUNITY, ADD BEAUTY, AND INCREASE YOUR REPUTATION AS A DISCRIMINATING PLANTSMAN.

SELECTIONS WITH HIGH POTENCY BEAUTY RATINGS

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This 11 year old tree is an example of the good growth and excellent pyramidal form made by this tree. Its blazing fall color, plus form, have made it a popular tree for streets in all sections of the country. No enemies and hardy in zone 2.

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Cleveland Maple—
Oval upright form, large dark green foliage, to 30 feet.

Scanlon Maple (P.P. 1722)
A pyramidal, stunning fall color, to 35 feet.

Irish Maple—
Roundheaded tree with upsweeping branches, to 35 feet.

Tilford Maple—
An exclusive selection of a splendid globe form, to 30 feet.

Sycamore Maple—
To 30 feet—rich green foliage—thrives under poor soil conditions.

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Deep rich green foliage with burgundy color under leaf, to 25 feet.

Evodia hupehensis—
Blooms in mid-August with umbels of white flowers, successful as street tree, to 25 feet.

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Great street tree potential—blooms when quite young—flowers white, 3 inches diameter—to 35 feet.

Chinese Scholar Tree—
From Zone 6 South becomes large, in Zones 5 and 4 will go to 25 feet, flowers white in August.

Anise Magnolia—
Pyramidal flowering tree, good foliage, to 30 feet.

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Pink flowering tree in June, good street tree, to 25 feet.

Trident Maple—
Compact head of small shiny foliage, brilliant red fall color, to 25 feet.

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Beautiful foliage, fragrant flowers, low maintenance, to 30 feet.

Shakespeare Crab—
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TAILORED TREES "To Fit The Space"

ALONG THE WAY With .... EDW. SCANLON

■ The seed of CEDRUS LIBANI that AL FORDHAM OF ARNOLD sent me was carefully placed in the FAMILY ICEBOX (refrigerator to you aristocrats) for a 90 DAY COOLING PERIOD —so I forgot and at the END OF 130 DAYS the seed had germinated. Have put it in a flat and IN JUST a few days they were POPPING UP like grass. MIGHT NOT be a tragedy after all.

■ **Stopped in at the ASPLUNDH HOLY OF HOLIES the other week in JENKINTOWN. First time I had seen the new board room or SAFARI ROOM as LES AND CARL called it. It's a BEAUTIFUL LAYOUT with about 30 MOUNTED heads—water buffalo, Rhino and ALL KINDS OF ANTELOPE including a CHEVROLET IMPALA.**

■ A letter from NEAL LIMING IN NEW DELHI on the IMPENDING VISIT of A.T.W. to that area tells of the CONCERN OF MR. N. at the prospect of being subjected to the PHILOSOPHY OF SMALL TREES. They WITHSTOOD MR. K. and his PHUNNY PHILOSOPHY; they LIKED MR. E, but NEAL says "welcome" — he DOESN'T ANTICIPATE any incidents. OK NEAL—I'm mostly interested in SEEING THE TAJ MAHAL. but could be PERSUADED TO LEAVE BEHIND a few thousand words about SMALL TREES. And, oh YES I want SOME GOOD STREET TREE PIX for the book —"TREES AROUND THE WORLD."

■ **Had dinner with NANCY AND RON HARPER at EXTON, PA., a short time ago—RON IS OUR REP there with Phila. Elec.—NANCY had a beautifully TURNED OUT PORK ROAST, but the BEANS, THEY WERE PERFECT. That girl should be in the HALL OF FAME FOR BEAN COOKERS. Invite me again (now isn't that a SNEAKY WAY to wangle a GOOD MEAL?).**

■ A SURPRISING NOTE from our FORMER REP in Phila. CHUCK WEDEKIND, informs us he is now ASS'T DIRECTOR OF PARKS in YOUNGSTOWN. GOOD LUCK CHUCK drop into the RANCHO SOON.

■ **A VERY SAD NOTE came from DOWN UNDER several days ago telling of the SUDDEN DEATH of CR. W. A. COMEADOW, president of the ROYAL HORTICULTURAL SOCIETY OF AUSTRALIA. My correspondence over the PAST YEAR OR SO, relative to my lecture at Melbourne next October, INDICATED MR. COMEADOW to be a FINE, FRIENDLY GENTLEMAN and I had looked forward with GREAT PLEASURE to his invitation to STAY AT HIS COUNTRY HOME during my visit. This fine man will BE GREATLY MISSED by HORTICULTURE IN AUSTRALIA and his absence will DULL THE EDGE of the pleasure I had ANTICIPATED ON MY VISIT. Mr. Theodore Brunn is Acting Vice-President.**

■ FEW WILL FORGET this spring for a long long time. It has BROKEN ALL RECORDS for meanness—and March is USUALLY MEAN without trying. IN THESE PARTS it started about March 3 and kept up until the 27th. The low was 3° below, WITH FEW DAYS higher than 30° or 32°.

■ **The NATIONAL ROADSIDE COMMITTEE sent a reprint of READERS DIGEST containing a good story titled "THE GREAT BILLBOARD SCANDAL OF 1960." Also HARPERS MAGAZINE has a good story by an advertising man. There are a LIMITED NUMBER of reprints available—50 FOR A BUCK and the address is 1214 Sixteenth St. N.W., Wash. 6, D. C.**

■ The 27th annual meeting of the WESTERN SHADE TREE CONFERENCE will be held in Long Beach, LAFAYETTE HOTEL, May 8-11. Wish we could make it but that is a busy time around here. DOES ANYONE REMEMBER the 9th Conference held in LONG BEACH. That was when someone, don't remember who conveniently was THROWING WATER BOMBS from the 3rd floor of the Hilton Hotel.

■ **The 9th CONFERENCE also was the scene of the CONSOLIDATION WITH the National Shade Tree Conference—as the WESTERN CHAPTER.**

■ My appeal to CITY ARBORISTS FOR TAGS or other material ATTACHED TO NEWLY PLANTED trees brought some INTERESTING RESULTS.

■ **Madison, Wis., thru George Behrnd, Forestry Supervisor attach a white paper tag 3½" x 5½" giving the name of the tree and asking the ABUTTING HOME OWNER to provide some "EXTRA" CARE for at least TWO YEARS.**

■ DON OBERT, Dir. of Parks and BILL BELL, Supt. of Street Trees at LONG BEACH have worked up a letter sized piece that is left with the property owner. They ask that CHILDREN BE CAUTIONED not to damage the tree and that PERIODIC WATERING be observed.

■ **SANTA BARBARA that is a BIT STERNER than the others, and was sent by W. G. BEITTEL, CITY ARBORIST. In addition to the name, they also describe the tree briefly—as—QUILLAJA SAPONARIA — "UPRIGHT, GRACEFUL EVERGREEN." At the top the tag reads "CITY PROPERTY—UNLAWFUL TO DESTROY."**

■ GOOD OLD HARRY—he's really not too old—but old HARRY THE TURNER, East Orange, N. J., sent us his tree tag. It is a 2½" x 5½" shipping tag that ENTREATS PEOPLE TO WATER the tree during JUNE, JULY AND AUGUST —and states that the tree will INCREASE THE VALUE of the property.

■ **A letter is MAILED TO HOMEOWNERS in EVANSTON, Ill., where new TREES ARE PLANTED. CHARLES T. BYRNES, SUPT. OF PARKS sent the copy. It WARNS that the city WILL NOT REPLACE any tree if it dies, if the INSTRUCTIONS WERE NOT FOLLOWED.**

■ The Wisconsin Power and Light Co., has a LITTLE PRINTED BOOKLET on their line trimming operation. They ask that people KEEP THEIR CHILDREN clear of the WORK AREA, and they state the reason for the operation—TO CLEAR LINES, remove dead and DANGEROUS LIMBS, etc.

■ **I have some RARE CHERRIES at the RANCHO that should FLOWER PRETTY GOOD this spring. PRUNUS PILIOSCULOSA is a tight upright grower—better form than AMANAGOWA, but not supposed to be as good in flower. I saw a nice specimen at the UNIVERSITY OF WAGENINGEN IN HOLLAND in the fall, so my few specimens, IF THEY BLOOM, will be the first I have seen of the bloom.**

■ Another cherry is PRUNUS OKAME a hybrid between P. INCISA AND CAMPANULATA. It has CARMINE-ROSE FLOWERS—a form like Kwanzan and BLOOMS IN MARCH in England.

■ **One cherry that SOUNDS REAL GOOD, but which I haven't SEEN IN BLOOM, is P. SUBHIRTELLA FAKUBANA—it is a striking variety according to MR. HAROLD HILLIER—rose—madder flowers — UPRIGHT FORM — "easily the most colorful of the Spring Cherries".**

■ TAI-HAKU, which bloomed last spring while I WAS AWAY, is a BEAUTIFUL THING. I saw it in England, but WILL SEE IT HERE this year. It has the LARGEST FLOWER (WHITE) of all the cherries—OVER 2½".

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TREES MAGAZINE
7621 Lewis Road,
Olmsted Falls 38, Ohio

The Editors of TREES invite discussions, comments and all type of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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TREES Magazine is a bi-monthly Journal published at Olmsted Falls, Ohio, by Edward H. Scanlon, and is devoted to the advancement of knowledge in the aesthetic and functional uses of exotic and native ornamental trees; to the advancement of research in pathological, entomological and physical disorders of ornamental trees; and to the education of the public to the advantages and need of using trees properly, both aesthetically and functionally. TREES Magazine is dedicated to the furtherance of the technical and business administration of Trees (Street and Ornamental); and Parks (Municipal and National) in the U. S. Scanlon Publishing Co., 7621 Lewis Road, Olmsted Falls, Ohio. Subscription by mail $3.00; outside United States $3.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

March-April, 1960 **Journal of the National Arborist Association** Vol. 20, No. 3

Edward H. Scanlon, Editor

7621 Lewis Rd., Olmsted Falls 38, Ohio ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

SHEARED AND FORM TREES HAVE PLACE HERE

It is a pity that our approach to the use of trees has been, to a great degree, guided by the disciples of the great naturalistic movement to the almost exclusion (99%) of the common sense and fuctional philosophies.

We are convinced from practical experience that the form trees have two things going for them — and these are very powerful factors. 1) They make sense, because if used with judgment they will greatly reduce maintenance, removal costs, and conflicts, 2) The general public likes the unusual that is presented through the use of globes, columnar and flowering trees on streets. This also we know from practical experience, as well as from audience response to lectures.

Many of the downtown street tree plantings we have seen have been completely washouts or nearly so, because in most instances the trees used have been nothings. For the other side of the story, the business people responsible for these installations usually wait until the eleventh hour and then give either the city park officials or private nurseryman the bums rush to do the things chop chop. They do not understand that trees are not like garbage cans—you just don't reach up to a shelf and pick up the size, shape and color you want and expect to have it put on a song and dance five minutes after it is placed in the container on the street.

It would probably cause some of these masters of finance to shudder and run away if they were told they should let contracts for such a venture at least a year in advance. This would give the plants a chance to become established in the containers and they wouldn't look like something the cat had dragged in, as most of the stuff we have seen most surely does.

The sameness and nothingness of most of the plant material used is a shame. Why not grow on same, Globe Locusts, Kwanzan or Akebono Cherries, Fruitless Mulberry (which could be sheared to high hedge or square shapes). The Globe Locusts could be used in the natural form, which is an eye catcher, its different, (and people like it), or it could be sheared to some form, square or hedge like. Tilia cordata (Littleleaf Linden) one of the best, if not the best street tree for hot sites, shears beautifully, and used along business streets sheared as a long hedge it would be a wow. At least people are almost unanimous in their admiration for this treatment as shown in color slides we have taken in Holland.

We could give downtown streets and plazas a real fascinating new look by departing from the prosaic or lazy use of trees that has built up here as a result of the single track thinking of self annoited purists.

This is not to be construed as a plea for a return to espalier, but the naturalistic proponents have swung us far to port as espalier swung to starboard several centuries ago in England. We should use trees wisely, not esoterically.

Landscape Architects Open Wash., D. C., Office

The American Society of Landscape Architects opened an office in the Union Trust Building, Washington, D. C., last month.

Mr. Lynn M. F. Harriss, former assistant superintendent of city parks, Oakland, California, is the field secretary of the organization.

The establishment of the office is a direct result of a major project of the Committee on Professional Service, whose chairman is Eugene R. Martini, landscape architect and planner, Atlanta, Georgia.

The need for closer liaison with national headquarters of architectural planning, and other allied professional and civic groups, in addition to the advantage of direct communication with the various federal agencies, brought about final action.

The American Society of Landscape Architects, founded in 1899, has its headquarters in Boston, Mass. Professor Norman T. Newton, of Harvard University, is its current president.

Forest Tree Growth Conference Scheduled

An international conference on Forest Tree Growth will be held at the University of Arizona, Tucson Arizona, April 11-13.

Sponsored by the Tree-Ring Society; the Laboratory of Tree-Ring Research, University of Arizona; Department of Watershed Management, University of Arizona; and the Division of Forestry, Arizona State College, the conference will include noted scientists from the United States, Canada, and Europe.

General chairman of the Conference is Dr. Terah L. Smiley, Director, Geochronology Laboratories, University of Arizona, assisted by Dr. Frits W. Went, Director, Missouri Botanical Garden, St. Louis, and Dr. Charles O. Minor, Director, Division of Forestry at Arizona State College.

One-half day sessions will be devoted to each of six major fields of study regarding tree growth. Subjects and moderators are: Tree Physiology, Dr. T. T. Kozlowski; Genetics, Dr. Harry A. Fowells; Soils, Dr. Robert Zahner; Climate, Dr. A. L. McComb; Dendrochronolgy, Dr. George C. Allen; Mensuration, Dr. George M. Furnival. Outstanding foreign speakers will include Elias Melin of Sweden, Donald A. Fraser of Canada, Bruno Huber from Germany, Olaf Langlet of Sweden, and T. F. Wareing from Wales.

All six sessions of the Conference will be open to interested persons. No registration fee is involved.

50th Anniversary for Davey Bulletin

The Davey Bulletin, employe magazine of the Davey Tree Expert Co., Kent, Ohio, celebrated its 50th anniversary February 20. The event was marked at a banquet attended by company officials.

In the picture above, Martin L. Davey Jr., left, president of the Davey Tree Expert Co., is shown receiving the first piece of anniversary cake from George White, editor of the magazine for 37 years.

In his comments, Davey pointed out that when the first Davey publication appeared, the company sales force consisted of six salesmen and 38 field men, all in Southern states. In addition, there were 20 men in Kent attending what was then known as the Davey School of Forestry.

"Today," he stated, "our sales force numbers 65 with close to 1,500 men in the field force. The Davey Bulletin has been a guiding force in this nationwide growth."

Except for the two years 1913 and 1934, at least one issue of the Bulletin has appeared annually since 1910.

Western Pine Association

Mr. W. E. (Bill) Griffee, Portland, Oregon, was named secretary-manager of the Western Pine Association at the group's annual board of director's meeting, March 5, in San Francisco. Mr. Griffee succeeds Mr. S. V. Fullaway Jr., who retired earlier this year after heading the group for 30 years.

Real Sure Sam

Came to work, started up the tree,
Oops! forgot to bring my rope with me,
Oh well who needs it, I climb well,
This the story soon will tell.
A slip would mean a nasty fall,
Yes but I never slip at all.
There I've reached the top at last,
Now to trim this tree real fast.
Grabbed for a branch, it snapped in hand,
Now let's see, where's a soft place to land.
Here in the hospital it could be worse,
I sure have got a pretty nurse.
I don't mind this broken back, but then,
They tell me I'll never walk again.

George P. Tyler,
Univ. of Massachusetts

Trees...

Insect Pests of Shade Trees and Ornamentals In the Midwest

By Hugh E. Thompson

Assistant Professor, Entomology, Kansas State University

Presented at the Midwestern Chapter NSTC, Feb., 1960

A discussion even briefly touching on all the insect pests of shade trees and ornamentals in the Midwest would take much more time than is available at this meeting. In preparation for this presentation the following factors were considered: 1, the wide range of insects attacking the many host plants growing in this extensive region; 2, the selection of insects that are of economic importance throughout the region; and 3, the advantage of having colored slides to illustrate the pests being discussed.

The final listing was selected on whether control recommendations are given in Kansas State University, Department of Entomology Mimeographed Circular entitled "Control Recommendations for Insects attacking Shade Trees and Ornamentals in 1960" (a copy of which may be secured from the author) and the availability of colored slides. Since control recommendations are given in the mimeographed circular, they are not discussed in detail in this report.

Elm bark beetles, even though they are of great economic importance as vectors of Dutch eml disease, are not discussed because of a later paper on the program; "Dutch Elm Disease up to Date."

However, now that Dutch elm disease is killing many of the elms in our region, we must look for replacement trees. One that would be an excellent substitute is hackberry *Celtis occidentalis*, a native tree that withstands very well our climatic conditions. The main objection to hackberry from most property owners and city arborists is that it is subject to attack by several insects causing galls. All but one are members of one genus, *Pachypsylla*, in the Family Chermidae, the jumping plant lice. Not only are they a problem because of the galls they cause, but they annoy homeowners when the adults crawl through window screens in the fall to get into the homes to hibernate. Our main consideration here is the injury to the trees.

The most serious is commonly known as the hackberry nipple gall. Severely infested leaves become distorted, discolored and frequently prematurely drop from the trees in late July or early August. Early in the spring, the adults return to the trees and are found crawling about on the twigs and buds before the leaves emerge. Where large infestations have been observed, it has also been noted that the leaf emergence has been delayed. Eggs are laid on the buds and young emerging leaves. Nymphs hatching from the eggs soon start sucking sap from the under sides of the leaves. Reacting to this stimulation, additional leaf tissue is produced, forming a gall over the insect. The nymphs remain in the galls through the summer, pupate and emerge as adults about the time the leaves normally drop from the trees in the fall. One of several insecticides, including Sevin, dieldrin and chlordane, will provide satisfactory control providing it is applied early enough. A single spray application applied as the leaf buds break open and the young leaves emerge will prevent infestation.

Cankerworms

Periodically, the most serious shade tree pests in the Midwest are two cankerworms, the fall cankerworm and the spring cankerworm. These names apply to the time when the adults emerge. The caterpillars of both species, which do the actual damage, feed in the spring as the leaves of the host trees emerge. In Kansas, at least, spring cankerworms are the more numerous. The old recommended control of banding the trees with Tanglefoot and other sticky materials failed for several reasons, and I will not discuss probable injury to the tree on which the band is placed. Usually the bands are applied too late. Even though the common species is known as the spring cankerworm, adults emerge very early. This year emergence took place in Kansas during the week between Christmas and New Year's. Even when the bands have been applied early enough, they have not been given sufficient care. Periodically, additional material must be applied, or the surface of the band touched up, to keep it sticky. Otherwise, the wingless females are able to crawl across the band, climb higher in the tree and oviposit. Sprays including DDT or lead arsenate applied to the leaves just as the leaves are to be attacked will give excellent control of cankerworms.

About the same time or shortly after cankerworms attack our shade trees, including hackberry, the latter are attacked by another leaf-chewing caterpillar, the hackberry empress. This caterpillar is very distinctive in appearance. It is green with a row of yellow dots down the middle of its back. On each side of this row of dots are two parallel yellow lines. It has branched antennae, resembling deer antlers, and two spurs projecting from the rear of its body. They are less numerous than cankerworms and would not be a serious problem if there were not three generations each year. After a hackberry tree has been defoliated by cankerworms and first generation hackberry empress caterpillars, just about the time it replaces its lost foliage it is attacked by the second generation of hackberry empress caterpillars. This happens again a third time late in the summer.

A serious insect problem on one of the more popular small trees is the redbud leaf-folder, often referred to as leaf-roller or leaf-tier. There are two generations each year. Small larvae first appear late in April. They are pale green or white or white with brown heads. They protect themselves by webbing two adjacent leaves together or folding over one leaf and webbing the two surfaces together. The caterpillar feeds by scraping away at the enclosed surfaces. When the webbed-together leaves are pulled apart the caterpillar is very active. It twists and wriggles around rapidly until it works its way to the edge of the leaf from where it drops to the ground. Older larvae have black and white stripes. Stomach poisons are effective when they are applied before the caterpillar webs the leaves together tightly.

Spruce Mite

During 1959, most evergreens were severely attacked by a pest not truly an insect but a close relative, spruce mite. Some confusion exists in nomenclature. All mites are not the frequently referred to "red spider." On deciduous trees European red mite and two-spotted mite are among the important mite pests. Rarely are these species found on evergreens—the most common species is spruce mite. Results of experiments in mite control on evergreens primarily indicated the value of applying miticides that kill eggs rather than the motile stages. A single application of Mitox, Ovatran and Tedion in early June gave excellent control of spruce mite through September. In the meantime, miticides, such as Kelthane, malathion, Delnav, etc., while killing the motile stages, failed to suppreess spruce mites through the middle of July.

Year in and year out, the number one pest on evergreens is bagworms. It, too, can be controlled relatively easy in its early stages but control gets progressively more difficult as the insect matures. Bagworms overwinter as eggs, as many as 500, in the bags of the old females. In late May the eggs hatch, the young worms migrate out of the old bag, begin to feed and each constructs its own bag from pieces of foliage webbed together with silk. It is generally assumed there is a single generation each year with pupation in August. The clear-winged males fly

to the bags of the wingless females, which never leave their bags, to mate. Females lay eggs within their bags and die. Observations made over the past two years indicate that the life history may be different in some areas in the Midwest. In our field work we have seen and have received reports of small young bagworms appearing in mid-August and early September. To date, there is no explanation for these observations, but obviously something is different. The choice of insecticides appears to be on a personal basis. Lead arsenate, Sevin, Toxaphene and malathion have all been reported to give control. Then again, each has failed. A new bacterial preparation has shown some promise, also.

Scale Insects

There are several scale insects causing significant injury to trees in the Midwest. I would like to discuss just briefly a few of these. The first of these is juniper scale. It attacks most of our ornamental junipers. Heavy infestations are readily observed because of the white appearance of the waxy secretion of the adult insects. It overwinters as third instar nymphs. Although they are not mature, it is possible in this instar to distinguish males from females. By mid-May, adult insects are present and mating has occurred. Young crawlers emerge from under the old scales, migrate to new growth and settle down to feed and develop. There are several generations each year. Several repeated applications of malathion at 7-10 day intervals will control the young crawlers when they are active.

On burr oaks and pin oaks, oak kermes scale is frequently a problem. Infestations are made noticeable by their effect on the new growth. Where the number of scales present is large, new twigs do not extend normally but remain stunted and shortened. The leaves are then produced in a rosette. This pest overwinters in the egg stage under the old scales. In mid-June crawlers appear which migrate to the leaves. As a result of their feeding the veins in the leaves, the leaves twist, curl and yellow. Frequently, the leaves and twigs die. The young scales mature and another generation of crawlers attack the leaves. The third generation crawlers migrate back to the twigs where they settle down around the terminal buds. In the fall, under their scale coverings the females produce eggs that overwinter. Three sprays of malathion and a single spray of Sevin applied in June gave satisfactory control of this pest.

European elm scale, although it is present throughout the Midwest, is a real menace to elm trees in the high plains region of western Kansas, western Nebraska and perhaps other states as well. For example, small communities in western Kansas lose as many as twenty-five elms a year. Many other trees are severely injured. Populations need to be quite large to cause this much damage. In experimental plots, six inch twig examples are collected in May and the number of adult scales counted on each. Frequently, where no control has been attempted the number of scales will exceed 700 per sample. Severely infested trees are easy to spot by the wilting, dying leaves and sticky, dirty black layer on the bark. Honeydew secreted by the feeding scale insects drips everywhere and sooty fungus grows wherever it falls.

The life history of European elm scale is an unusual one for a scale insect. There is only one generation each year. It overwinters as an immature nymph around the buds and in the bark crevices. Late in April the nymphs become adults which are legless and have a hard brown outer skin around which it secretes a fringe of white waxy filaments. In mid-June, the females lay eggs under the scale covering. In just an hour or so these eggs hatch into tiny yellow crawlers.

(continued on Page 28)

BRANCHES OF THE LAW

By Howard Newcomb Morse

Counsellor at Law of the Supreme Court of the United States of America

"Cedar Trees vs. Apple Trees— The Weighing of Property Values"

The Virginia State Entomologist brought proceedings under the Cedar Rust Law in the Circuit Court of Shenandoah County, Virginia, against Miss Rebecca Bowman. The proceedings sought the destruction of certain red cedar trees growing on her property as a menace to adjacent apple orchards.

The court rendered judgment ordering the trees to be destroyed in accordance with the requirements of the Virginia Cedar Rust Law. The red cedars were to be cut down, leaving stumps not over four inches high from the ground. Those large enough were to be cut into fence posts 7½ or 9 feet in length as Miss Bowman might direct. The posts were to be closely trimmed. The tops from the posts were to be trimmed and so many as were over two inches in diameter were to be cut into cordwood lengths. The brush was to be hauled to some nearby point indicated by Miss Bowman and burned at such place. The posts and cordwood were to be piled at convenient places nearby as the property of Miss Bowman.

The work was to be done in a careful manner under the supervision of the State Entomologist at the expense of Shenandoah County. Miss Bowman was to be allowed the sum of $200 as damages for injury to her land. This was to be paid to her before the work of cutting the cedars commenced. Miss Bowman appealed on the ground that enforcement of the requirements of the Virginia Cedar Rust Law would constitute illegal interference with her property.

Red cedar trees were numerous in the vicinity of those involved in this case. Such cedar trees were generally infected with the disease of cedar rust. The growing of apples was a large and important industry in the vicinity.

The disease moved "from the cedar tree to the apple tree in the spring, and from the apple tree to the cedar tree in the summer and fall," for a distance of one mile or more, depending upon the direction and velocity of the wind. The spores were borne by the wind and were sown, resulting in the perpetuation and spread of the disease. These two kinds of trees being alternating host plants, the spores could infect either kind on which they settled. An infected orchard might in turn infect cedar trees other than those which caused the original infection, and those newly-infected cedars might in turn infect still other orchards. This condition could go on throughout the whole country if the orchards and cedar trees were located with respect to each other within the radius of infection. The cedar trees involved in this case were within one mile of an apple orchard.

The Supreme Court of Appeals of Virginia affirmed the decision of the court below. The Supreme Court of Appeals declared: ". . . the destruction of the red cedar trees . . . which thus constitute a menace to the apple orchards is absolutely necessary to prevent the extinction . . . of the apple industry." The Court noted that the growing of cedar trees in the vicinity involved in this case was not an industry. It observed that cedar trees were not planted or cultivated, but were indigenous to the soil, spring up where the soil was uncultivated and wild. The Court also pointed out that the wood of the red cedar could not be used in the manufacture of lead pencils or for any purposes other than for fuel or fence posts.

The Court held that, as compared with the value of the apple trees, to which their existence was a serious menace, the value of the cedar trees was slight. It ruled, therefore, that the regulations provided for in the Virginia Cedar Rust Law "have a real, substantial relation to the public object in view, and . . . do not impose an unusual or unnecessary restriction upon the lawful use of private property."

The Use of Radio Active Isotopes In Tree Disease Research

(Part 2 Conclusion)

By James E. Kuntz

Department of Plant Pathology
University of Wisconsin

Including Work By

C. H. Beckman, formerly, University of Wisconsin

J. G. Berbee, formerly, University of Wisconsin

J. R. Parmeter, formerly, University of Wisconsin

C. R. Drake, formerly, University of Wisconsin

Technical Advice From

A. J. Riker, University of Wisconsin

R. H. Burris, University of Wisconsin

Among hundreds of trees investigated, root grafting was common among northern pin oaks, but was infrequent among bur oaks or among white oaks. In only three instances were grafts discovered between different species of oak; namely, between northern pin oaks and adjacent bur oaks.

Roots of all sizes, 1/8 inch or larger, were found grafted together. Trees in dense stands were united much more frequently than were those in open stands. Washing and digging out of tree root systems confirmed these results. For example, when the root systems of three nearby northern oaks were partly excavated, 28 root grafts among the three trees were revealed. Grafts between roots of the same tree were common. By means of root grafts, trees often "adopted" parts of the root systems of other trees which had been destroyed.

The direction of sap flow between dominant and suppressed trees was determined in limited studies. While isotopes moved in both directions, they more often passed from the dominant to the suppressed tree. This phenomenon perhaps assists the survival of suppressed trees.

Root grafting within other given species was observed as follows: large-toothed aspen and red pine trees were grafted to a considerable extent; red oak, sugar maple, and white pine trees were grafted frequently; quaking aspen trees were grafted occasionally; white birch and jack pine trees were grafted seldom. No grafts were found among white spruce, black spruce, or balsom fir trees. Root grafting was common among 4-year-old red pine seedlings in nursery transplant beds. These results confirm the occasional reports in the literature concerning root grafting between trees.

In a similar manner, radioactive isotopes have clarified the manner in which the oak wilt disease develops and spreads from tree to tree in local areas. Oak wilt is a vascular-wilt disease which results when the fungus, *Endoconidiophora fagacearum* Bretz, invades the water-conducting vessels of oak trees. Sudden wilt, premature defoliation, and death of infected northern pin oaks usually follow. Bur oaks and white oaks more often show only wilting of the leaves on scattered branches and usually live for several seasons after initial symptoms. Apparently, some bur and white oaks survive infection.

The movement not only of solutions but also of particulate material was traced with isotopes. The rate and distance radioactive spores of the oak wilt fungus were carried in sap streams were measured. A concentrated spore suspension first was treated for 1 day with 1 mc. of $Ag^{110}NO_3$. Next, the spores were washed repeatedly until the supernatant liquid had little radioactivity. The spores were resuspended and treated with 1 mc. of NaI^{131}. The spores, now containing insoluble $Ag^{100}I131$, were doubly radioactive. They again were washed repeatedly. Although their weight was increased, the radioactive spores were soon detected in the terminal branches of an oak 5 feet high. Fungus thus passed readily through the water-conducting vessels of oaks.

Studies of host responses to fungus invasion demonstrated that the upward movement of radioactive isotopes in the transpiration streams of infected northern pin oaks was reduced by 85 per cent 3 to 4 days before foliage wilt appeared. A further decrease occurred during the development of moderate and severe wilt symptoms. Movement in trees with severe wilt often was reduced by 99 per cent. Similar reductions were found in the flow of water through branch sections cut from wilting trees. Microscopic examinations showed that tyloses and gums had formed the xylem vessels throughout the outer annual rings of the sapwood. They were consistently associated with and preceded leaf wilt. These results indicated that vascular plugging had effectively blocked water conduction. Permanent wilt and death followed.

Critical differences in the reaction of other oak species to infection were detected immediately by means of radioisotopes. In infected bur oaks, radioisotopes moved normally until 3 days prior to incipient foliage wilt. After wilt development, movement continued only in certain unobstructed portions of the outer annual ring. Radioactivity was detected only in the symptomless branches. Microscopic examinations of the trunk and branches of infected bur oaks showed that vascular plugging had developed only in narrow, vertical sectors of the trunk and in branches having vascular connections with these sectors. Thus, as with infected pin-oaks, radioisotopes demonstrated that fungus distribution, vascular plugging, and symptom development were closely associated.

The continued downward movement of isotopes into and through grafted roots of diseased oaks indicated that vascular plugging was limited in the roots. Through roots isotopes moved even after aerial portions of the tree had died.

This basic information expedited effective control measures. In lawn and park areas where individual trees were of great value, severing all root connections to a depth of 36 inches or more between wilting and adjacent healthy trees usually prevented further local spread. Since the oak wilt fungus frequently moved from infected trees soon after wilt development into nearby trees, severing root connections between 2 or 3 rows of trees appeared advisable. In woodland areas where individual trees were of relatively low value, poisoning healthy oaks within 25 feet of the wilted trees usually confined the infection. Root kill was essential. The width of the poisoned barrier depended on species, age, stand density, and accessibility.

Radioactive isotopes proved to be effective tools for studying the movement of materials within and between forest trees. Even at low concentrations, their presence could be detected immediately for some time. As used, they caused no visible disturbance to the treated trees. They facilitated root-graft studies by indicating which roots should be excavated. Their chief disadvantages were their expense and their rapid dilution in moving through the trees.

In relatively dense stands of northern pin oaks in central Wisconsin, practically all trees appeared to be united to their neighbors through root grafts. Thus, trees of a forest stand might be considered as a united "community" rather than as independent individuals. Normally, such unions could be beneficial. However, when a disease such as oak wilt appeared, the fungus had direct vascular "pipelines" from tree to tree. Even-aged stands of the same species are especially vulnerable to such attack.

(continued on Page 20)

11 States May Join NAD Group

Members of the National Arbor Day committee are anxiously awaiting the outcome of proposed Arbor Day bills in 11 states. Success would pull the trigger for a campaign on the national level.

According to Harry J. Banker, executive NAD secretary, several U. S. Senators believe that the committee would have a strong talking point for a national bill if 25 or more states adopt the last Friday in April as Arbor Day.

Fifteen states are now counted in: New Jersey, Connecticut, Maine, Massachusetts, New Hampshire, Ohio, Illinois, Indiana, Wisconsin, South Dakota, Utah, Idaho, Iowa, Rhode Island and Nevada.

States with pending Arbor Day bills are New York, Delaware, New Mexico and Pennsylvania.

Not quite as advanced in their efforts, but getting close to some real action on National Arbor Day legislature are Tennessee, Kentucky, Maryland, Virginia, Minnesota, Missouri and Michigan.

The crusade for a National Arbor Day was started 20 years ago by Edward H. Scanlon who stated that the greatest good the country could derive from Arbor Day would not be the planting of one or two trees here and there, but rather the advertising via newsappers, radio, television and other media which would make everybody tree conscious all through the year.

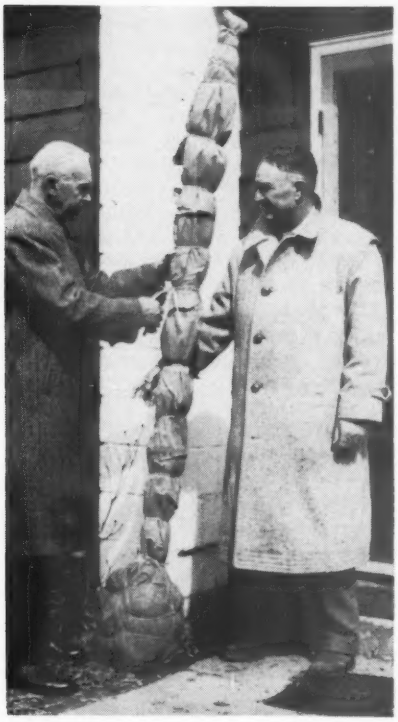
From the beginning, Mr. Scanlon understood that one day could never possibly be selected as a planting date in every state due to varied weather conditions; however, he also recognized the fact that a far greater good could come from a national unified campaign of publicity. (A full account of NAD activities through the years was published in the March-April 1959 issue of TREES).

The wisdom of these words is evident now. With almost a third of the nation observing NAD, C.B.S. has expressed an interest in receiving television and radio scripts for 1961; King Features is syndicating a NAD story this month to over 600 daily newspapers; weekly papers are clamoring for news from state chairmen; and observances are being planned by countless schools and organizations.

Regardless of results this year, members are planning an over the quota celebration for 1961 in conjunction with the 21st anniversary of the committee—with complete coverage in all media.

If you would like further information regarding the National Arbor Day committee, names of state chairmen, etc., write to Harry Banker, 56 Fitzrandolph Road, West Orange, New Jersey.

Arbor Day observances (the last Friday in April) are being adopted by the majority of Boy Scouts of America Councils in the East according to Harry J. Banker, Executive Secretary of NAD. The picture above was taken at an Arbor Day planting in Fairmount Memorial Park, West Orange, New Jersey. Left to right: Edward Stoeffels, Boy Scout executive; Mr. Banker; and William Boland, superintendent of Parks and Recreation, West Orange, N. J.



Last year, Ed Scanlon, right, national chairman of NAD, celebrated Arbor Day in Vienna, Austria by assisting in the planting of a Scanlon Red Maple (P.P. 1722). Charles Blickle, Mayor of Olmsted Falls last year, is shown checking the tree with Mr. Scanlon before shipping.

The Wandering Arborist Returns To Europe And England—Not Ireland

(Part 6 conclusion)

By Ed Scanlon

Crataegus Grignonensis as described in the text, is shown here used to splendid advantage in Hilversum, Holland.

Although the hawthorns had not begun to flower I did hit another jackpot. This was a beautiful double row of Ruby Red Horsechestnuts (Aesculus carnea brioti). Had spotted it on the visit to Hilversum two weeks before. Now they were in good flower and what a grand sight. You know this species doesn't blight the way *hippocastanum* does here in the summer. At least none that I have ever seen do. So it is a wonder to me why it isn't used much more widely on our streets. Of course this tree has all the drawbacks that, unfortunately, good trees have—it is slow—costs more than our usual weed street trees—does not transplant as easily as a silver maple and consequently losses will be higher. But the city arborist who knows what the basic principle of his job is, to beautify and glorify the streets of his city; and the ones who have imagination and *know how to plant and care for trees,* will begin to use this very lovely aristocrat. They do require skill and cost more, but success with trees of this fine quality and character are the hallmark of proficiency in street tree display. Any clown can get good results (percentagewise), at low cost, with silver maples and such trash.

We saw several nice streets of *Crataegus grignonensis,* as mentioned before. This is a dandy. It impressed me greatly the first time I saw it two years ago in Rotterdam. Took some nice shots of these trees in Hilversum, but, what shots they would have made in bloom. Maybe tho it is a good thing I was disappointed—now I'll have a good excuse to go back—as if I needed one.

The large Chinese Hawthorn (C. pinnatifida major) is a beautiful little thorn to about 20 feet. Judging from the several streets of it I saw in Hilversum I have to think back real fast to the Lavalle and Toba thorns not to blurt out that it's the best. It is a beautiful tree and would probably come close to Lavalle and Toba. Oh! and here we go, also Washington, in a close race for the number one spot.

The thorns have such a wide field of application it is difficult to know why they have not been used more. As street trees they offer toughness, small stature, small trunk caliper and root system, tolerance of heavy soils, beauty of form, flower, foliage and fruit. What else is there?—Oh yes, that *all important end-of-the-line* consideration, *low removal cost.* That should place them high on the preferred street tree list of any city arborist, just as it has for the wise and discriminating street planters of Europe and England—and they are wise, don't ever delude yourself.

After several hours more of looking over this lovely little city we headed back toward Boskoop. On the way, on the outskirts of a little town named Laren, we came across a beautiful street of the pyramidal European Hornbeam (C. betulus pyramidalis). I couldn't say enough for this outstanding tree. The trees on this street were compartively young, maybe 15 years, and they were perfect. Here is a pest free tree that almost looks like it had been made in a factory. Their growth is so uniform and nice and on this road, it wasn't really a city street, the conditions were such that the uniformity of growth was outstanding. The planting consisted of about six city blocks in length and was a long slope. The trees at the top however were the same size and as well developed as those toward the lower end of the slope. This is rather unusual with most species, because as a rule the lower trees will be larger, sometimes much larger, than those at the top. Some good pictures were obtained but the road was a bit too narrow to do full justice to the niceness of the planting. This pest-free tree is not a slow grower either. Surprisingly it grows quite rapidly—six to ten inches a year.

We arrived back in Boskoop after dark where I checked in at the Florida Hotel and was warmly welcomed by the genial manager Fritz Kohler. This is a very comfortable place, with good food, and was built with the assistance of the Boskoop nurserymen.

The next day was Sunday so we all decided to rest up a bit. I walked around Boskoop, and its quaint canals and efficient nurseries, for a few hours. The experimental gardens at the Horticultural School were a blaze of color. The azaleas and rhododendrons were at their height and of course so were the tulips. In my travels I met Mr. G. C. Block, a Boskoop grower of azaleas. He has an idea of creating, in Boskoop, another Keukendorf featuring azaleas and rhododendrons. Keukendorf is an old estate, in the tulip section, near Haarlem, that has been taken over by the bulb growers. Each year they have a magnificent Tulip festival there—and it is magnificent. It is well worth a visit. I think Mr. Block has an idea tho. An azalea show place would be ten times more spectacular than even the famed Keukendorf.

I hadn't been in The Hague much this trip. Mainly because Mr. S. G. A.

Doorenbos, the famed former Director of Parks, was not in town, but I had obtained some pictures of several lovely streets of the Double Flowered Mazzard Cherries, on a short visit several weeks before, so I decided to hop a bus and mosey over for awhile.

One of the things that thrills me about wandering around these countries are the odd trees you spot in the most out of the way places. Outside of one little village, in the yard of a farmhouse, I spotted the finest and largest specimen of Fagus sylvatica zlatia, the golden leaved beech, that I have ever seen. Arriving in The Hague I walked around the marvellous old parliament buildings for a while. Coming out on a Square I was startled to see a double row of what certainly had all the earmarks of Horsechestnut trees, but they had what looked like orange fruits about the size of an indoor baseball, hanging all over. Ah ha, this looked like the arboricultural find of the century, but after a limping canter, you don't run with that bag of cameras I tote—I approached the trees and saw that the orange fruit was electric bulbs. Inquiry elicited the information that the decorations were in honor of the Queen's birthday a few days hence.

The Hague is one of the few cities I have seen in Holland where there still remain some elms and large planes on the streets. Mr. Doorenbos had explained two years before that because of the proximity of the city to the North Sea, and the cold biting winds that sweep the city, the elm withstood the conditions better than most trees. Still the elm disease had badly decimated the elm population and they were rapidly being replaced with smaller type trees. Principal among the replacements were Wineleaf and pyramidal Sycamore Maples (Acer pseudoplatanus vars.) and the species. These trees also had been found to be able to take the cold winds.

Arrived back in Boskoop and made arrangements with Henry Vink to meet him in Rotterdam the following morning.

The first thing Henry Vink showed me on this day, my last in Holland this trip, was a charming little street planted with Goldenchain (Laburnum Vossi) in full bloom. It was lovely and as the picture shows the trees were in scale with the very limited area. They did not dominate or overpower the available space (except when in bloom—I don't remember at all what the houses looked like, if any—but I note from the picture there are houses). This was just about perfect in-scale planting.

Next was a street of Sorbus aria majestica. I cannot find anywhere a common name for this beautiful Whitebeam variety, but it would not seem presumptuous to call it the Majestic Mountainash —it is just that. A real handsome tree of excellent form and very rich foliage—

Hotel Florida at Boskoop, Holland. Fritz Kohler and his family enjoying the sun on the veranda.

Laburnum Vossi. The Goldenchain fits perfectly in this charming lane in Rotterdam.

Sorbus Aria Majestica. One of the finest of all Mountainashes showing its splendid form on a Rotterdam street.

Acer Pseudoplatanus Vink, the pyramidal Sycamore Maple used very effectively on a Rotterdam street.

Henry Vink, Director of Parks, Rotterdam, looks over a fine specimen of the SCANLON RED MAPLE planted April 21, 1959 in The Park for the 1960 Floriade.

dark green with silver underneath. The picture shows a portion of the street on which these trees were displayed to such excellent advantage. Another real good member of the *Aria* group is Sorbus Zahlbruckneri. You will hear more about it.

We went then to The Park where the Floriade, the International Horticultural Exposition was being readied for the grand opening in March of 1960. The Red and Norway Maple "Tailored Tree" selections had all been planted—there are sixteen trees representing the eight selections—and I took a picture of Henry Vink beside the Scanlon Red Maple. (P. P. 1722). With a full growing season before the opening of the Floriade these trees should be in nice condition during the Exposition.

After lunch with Mr. and Mrs. Vink, we saw many other fine streets—Magnolia Kobus, more Crataegus x grignonensis, Sorbus commixta, and then a fine street of Kentucky Coffee Tree (Gymnocladus dioicus). I had seen streets of this fine American species in both Hilversum and Eindehoven and the Park Directors in both of these cities, Henry Aapkes and J. P. Fontaine were enthused about it. I remember the first street planting I had seen of this tree. It was in Santa Barbara, Calif., about 30 years ago. The trees were about 20 years old and while they were in a too narrow treelawn, (3 feet), they had not at the time, caused sidewalk trouble, but if they are still there they no doubt have by now. They should be planted in at least an 8 foot treelawn as they had been in Holland. It is a very handsome thing with its ghostly gray scaled bark and doubly compound almost tropical appearing foliage.

Tilia Mongolica. Mongolian Linden. This pendulous, handsome tree deserves wide use. It is the best of the Lindens.

Tilia Mongolica. The glistening ivy-like foliage of this tree makes it highly ornamental.

When the long leaf stalks drop the tree assumes a gaunt haunted appearance that is extremely decorative.

A street of particular interest was one shown in an accompanying picture, of the pyramidal Sycamore maple (A. pseudo Vink). This tree is a splendid thing for business streets, narrow treelawns and shallow setbacks. Because of its affinity for poor soils and dry conditions we should use it, the species, and other varieties much more widely.

I quite reluctantly had to bring this very educational and interesting day to a close and catch a bus back to Boskoop. I had a 9:40 p. m. flight on BOAC to London with Henri den Ouden, so I just said Aloha to a most interesting and talented friend, Henry Vink, and he can be sure I'll be bothering him again for more tours of his wonderful street trees.

We took off from Schipohl Airport at Amsterdam on the BOAC Viscount and landed at London Airport one hour and ten minutes later. London is a rough place to drop in without a hotel reservation but fortunately Henri was well known at the Charing Cross Hotel and so I made the grade. This is an interesting old hotel with spacious lounges and it is centrally located, not too far from Piccadilly.

The next morning I indulged myself in the many pipe shops nearby, and came away with another half dozen or so very fine pipes. Another merchant I visited was Hillhouse and Co., 11 New Bond Street, a quaint little hat shop, where they have the nicest assortment of tweed hats you would care to see. Fortified with 3 new creations I returned to the hotel to stash my loot, then lit out for the underground, and Kew Gardens.

At the gatehouse I asked the attendant to direct me to the Tilia and Fraxinus collections. If the two trees I wanted to see and get pictures of were photogenic specimens, this trip would have been worthwhile. First on the agenda was Tilia Mongolica, the Mongolian Linden. This tree has everything in my opinion. It is pendulous to about the same degree as *petiolaris* but will never attain the size. It has deeply notched, ivy-like foliage (see cut) and on streets would probably never go taller than 30'. The tree shown in the cut was 75 years old and about 45 feet tall. I spotted this tree the instant I came around a clump of shrubs. It was standing free and with the sun exactly in the right spot for pictures.

The foliage and form of this tree is exquisite. Why it should be relegated to a secondary list, as one author has done with it, is beyond my comprehension. It cannot be that it does not do well over here because last summer I saw a half dozen of them on a street in Kalamazoo and there was nothing unhealthy looking about them. They were beautiful.

I spent an hour or so at this shrine then set out for the Fraxinus collection. The spicy flower and good green leathery foliage of F. ornus, the Flowering Ash has intrigued me for years and particularly since growing it at the Rancho, but I could never locate a good specimen anywhere in this country to study the form. A picture of one in the late W. J. Beans "Trees and Shrubs Hardy in the British Isles," and located at Kew, satisfied me that it was a fine form for either street or home, but I wanted to see one in bloom and also obtain some good pictures. On my first visit to Kew in October, 1957 my curiosity as to form had been sated, but of course no flower at that time. This time it was bingo. The trees found were not the ones I had seen previously. There were four of them, all free standing. One was well advanced in flower, the other three in varying stages. *Ornus* has long been cherished as a street tree in Europe and now I know why (see cover). Some writers have said the flowers have a slightly disagreeable odor—if what I got a whiff of is disagreeable so is Chanel No. 5. The small trees at the Rancho have a spicey sweet fragrance and these at Kew were the same—also one seen in the Tuilleries garden and another in the Jardin des Plantes in Paris. These trees were in flower, badly crowded and small, but the odor was the same spice and sugar.

Many pictures later I checked over the other Ashes in this, the best collection I have ever seen. Most Ashes leave

me cold, partciularly our native ones. They have no leaf color, no particular interest in form and definitely should be confined to the one purpose they serve so admirably—timber. There were numerous species in the collection, the best of which were *Fraxinus Mandshurica,* a nicely shaped tree with glistening foliage; *Fraxinus spaethiana rotundifolia nana,* that's a mounthful for such a nice little tree, but that's what the sign read. *Mandshurica* is a tough one, will stand the cold of Zone 2.

An especially pretty tree, of which there is a fine specimen at Kew is the *Golden Coliseum Maple* (see cut) (Acer cappadocicum aureum). In addition to its nice golden foliage, it is doubly attractive as the new foliage breaks out all summer a nice bright red. A very lush appearance.

By this time the afternoon was growing old and I was dragging, but Kew is a difficult place to leave. And it is doubly so knowing that in addition to the many splendid things you have seen, that we just don't have good specimens of at home, there must be many others equally as desirable—but the dogs were really barking after 5 hours of plodding across the turf, so with a final detour through the very beautiful and extensive *Aesculus* collection I managed to get to the train and just about fall apart as I sat down.

Grabbed my gear at the Hotel. Caught a train at Victoria Station for Woking and walked in on my good friends, Mabel and Harry Chasemore about 9:30 p. m. I didn't have to be rocked to sleep—that's for sure.

Drove to Winchester and met Mr. Harold Hillier (Hillier and Sons Nursery). This was a long to be remembered day and if you have ever seen the Hillier catalog on just trees and shrubs you will know what I mean—if you haven't seen it, and read it, you haven't lived. It is the most outstanding list of trees in the world—which is quite a big place, but so is that list. I saw so many different trees that I was just about completely befuddled. But there were a number that will find their way to the Rancho. Outstanding was a low round-headed species of Linden (Tilia Kiusiana). The specimen was about four feet tall, as I recall, and almost a perfect globe. Twigs are fine and numerous. The foliage small and dainty. I think this has tremendous possibilities as a small globe head worked on 7 foot stems. After hiking over about three of the Hillier nurseries we went to Mr. Hillier's lovely home for tea. I departed with a very welcome invitation to return—I shall.

Returning from Winchester I stopped at Chobham to say farewell to John Straver. It was just about pub time so we repaired to the White Hart (see cut). The hosts at this 300 year plus inn are Dick and Doris Mumford, very friendly and attentive Inn keepers. The trouble is with English pubs, they must close at 10 p. m. It was just as well tho, I was beat. The fast pace of almost 30 days of continuous going was becoming a bit tiring.

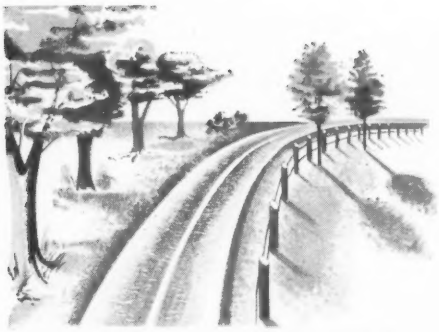
Fraxinus Ornus. Flower and foliage of this spicely fragrant prize ornamental.

Acer cappadicicum aureum, the Golden Coliseum maple. A beautiful specimen in Kew Gardens.

Young John Straver graciously offered to take me out to Saville Gardens in Great Windsor Forest the next day. It is the personal garden of the Queen and is a most beautiful place. The azaleas were at their full glory and it was a grand sight, including a splendid specimen of of the *Dove tree* (Davidia involucrata). From there we visited the famous Windsor Castle. This centuries old pile of stone, and what a big pile, is a fascinating place and anyone visiting England, as everyone should, must place this on his itinerary.

On the way to Woking I made a final stop at Wisley and obtained several pictures of the *Amur Chokecherry* (Prunus Maacki). The bark of this tree is a

(continued on Page 22)



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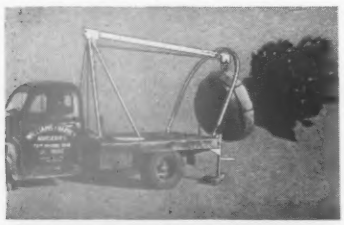

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From the BOSS'S DESK

By June Faulds

Just found out that James E. Biller of the Forman and Biller Tree Expert Co., Arlington, Va., was in the audience at a lecture Mr. Scanlon gave in Washington, D. C. recently. In renewing his subscription to TREES Mr. Biller mentioned, "The slides Mr. Scanlon showed were beautiful and very enjoyable." (Wish you had stopped to say "hello" Mr. Biller. We're always anxious to meet TREES readers.)

* * * *

Sidelight: The trip to D. C. was my first and of course I was anxious to see the famous cherry trees surrounding the Tidal Basin. This was no problem since the boss had the same idea. What a disappointment!

The famous cherries are a mixture of very old and very young trees. It was evident that no attempt was made to interplant in a discriminate way. Instead, areas of old trees were completely removed and replanted with young trees which were far from being of acceptable specimen stature. There must be a reason for such haphazard planting methods. If anyone knows, please write. The boss is stymied too.

* * * *

Woodbridge "Woody" Metcalf, Extension Forester, Emeritus, University of California, wrote us a long letter about his pet project—the development of an arboretum of as many of the true firs (Abies) of the world as will grow in one place.

Mr. Metcalf says he will discuss the project with Douglas Hamilton, farm advisor at Grass Valley, Calif. Seems that Grass Valley has added 65 acres to its city park and might be willing to develop a collection of firs. Mr. Metcalf hopes to round up as good a collection of firs as there is of pine species in the arboretum of the Institute of Forest Genetics at Placerville.

Another of his projects includes working with the Eucalyptus species, trying to get some that are particularly frost resistant.

* * * *

Dr. Richard J. Campana, professor of botany at the University of Maine, is working on construction of a series of keys to help recognize tree insects and diseases. The specific aims of his project will be printed in TREES in the near future. When the keys are ready for recommendation to the arborist, Dr. Campana has agreed to let TREES publish it first. There's good reading ahead!

* * * *

From Victoria, B. C. comes a letter about unused areas in the average parking lot, written by W. H. Warren, parks administrator. Mr. Warren suggests that the triangle shape at the end of each line in the lot be curbed or protected with barriers, excavated and replaced with good soil, and planted with trees.

We agree with his statement that the trees—"would enhance the area by relieving the drab flat expanse."

Mr. Warren concludes by saying, "There is a real job to be done by city planners, city officials and elected representatives to see that these fast growing blots on our landscape are clothed and made beautiful as well as practical."

(A good picture-story example of parking lot transformation with trees, featuring Oakland, Calif., was printed in the March-April issue of TREES, 1959).

* * * *

Gordon S. King, associate professor of entomology and plant pathology at the University of Massachusetts, tells us that in all probability any applications for enrollment in the School of Arboriculture received after June 1 will not be accepted. This is due to a general increased enrollment, limited dining facilities, etc. In the past, applications were accepted during June and July.

* * * *

T. R. Gauld of the Gauld Nursery Co., Niagara Falls, Ontario, dropped us a line to say, "I certainly look forward to your magazine."

* * * *

Harvey C. Morgenstern of the Phillipsburg High School Arboretum, Phillipsburg, N. J., says he was especially enthused about the first few paragraphs in Part 5 of the Wandering Arborist series.

"It seems to me," he wrote, "that it is high time something is done to impose penalties on litter bugs whether in the city or on the highway. We need more people in your position to make a drive for control of this problem."

Mr. Morgenstern said that New Jersey posts signs announcing a $50 fine for littering roads and comments that it is very effective.

* * * *

Correspondents in the Kansas area send word that a temporary "school" for tree men will begin soon in Wichita. The course, sponsored by the park board, will consist of 18 to 20 sessions and include classes in pruning, tree health, insect pests and new trees for Kansas. Students will be park employees and tree men from private industry and governmental agencies. The class will be limited to 40.

John Firsching, city landscape engineer, will conduct the course with the aid of Glenn Banks, representing the Kansas Arborist Association, and Ed Bracken, city personnel technician. Text for the course will be Dr. P. P. Pirone's "Tree Maintenance."

* * * *

Speaking about school days — we now call the boss "professor." He's one of several instructors retained by the Cleveland Board of Education for their Spring course in horticulture for homeowners.

* * * *

After skiing in Switzerland and skin diving off the Canary Islands and west coast of Africa, Rudolph F. Lange of Lange Tree Experts, is finally back home in Delavan, Wisconsin. He sent us a note this month with some of his observations — proving that tree men can't really forget about trees, especially when they're on vacation.

Looking through the botanical garden in Madrid, Mr. Lange found two beautiful sequoia gigantea specimens about 22 feet high, doing well, surrounded by a group of large palm trees, "The care of trees in Madrid," he says, "is an arborist's nightmare. Tree care seems to consist of only hacking all the trees to 20 or 30 feet without any attempt to shape them or remove dead wood."

Mr. Lange saw men working in trees equipped with only a saw or hatchet — hanging on a limb with one hand and chopping away with the other — no safety devices in evidence.

Mr. Lange said that the average rainfall on the Island of Lanzarote is two inches and when he was there it hadn't rained in 18 months. On this island, fig and olive trees are planted in lava holes and the ground is covered with black volcanic cinders that act as a condenser extracting moisture from the air. Crude walls are built around each tree for wind protection. "This is sure growing trees the hard way," Mr. Lange concludes. (Thank you for sharing your experiences with us Mr. Lange. If you took your camera along, we'd like to see a picture of these unusual plantings.)

* * * *

The Bristol Kempinsky Hotel in West Berlin is displaying recent issues of TREES in their lobby according to Mr. M. Zeidler, manager.

* * * *

I'll be scanning the boss's desk for a letter from you, so start the typewriters rolling.

Malcolm Milne To Head New York Arborists

Malcolm Milne, Rochester arborist, was elected president of the New York State Arborists Association at the annual meeting in Bronxville, N. Y.

Also elected were Freeman Parr of Hicksville, Paul Bergerson of Niagara Falls and Ed. F. Collins, of Rochester, all vice presidents; Frank E. Karpick, Buffalo, secretary-treasurer; and the following executive committee members: George H. Callaway, Argyle; Arthur E. Sandstrom, Syracuse; Lawrence J. Boyer, Bayside; Frank Coyne, Yonkers; and Arthur E. Weidhaas, Ithaca. Dr. A. M. S. Pridham was named editor of the organization's newsletter, Shade Tree Notes. Dr. Weidhaas will be associate editor.

Carl Lundborg presided at the annual banquet. Citations of meritorious service to arboriculture were presented by Dewhirst Wade, awards committee chairman, to Dr. Albert Hartzell, Boyce Thompson Institute, Yonkers; Dr. P. P. Pirone, New York Botanical Gardens; and Mr. Barney Slavin, retired from the Rochester Parks system. Robert Bartlett of the Bartlett Tree Co., Stanford, Conn., presented a New York State Arborist certificate of merit to Roger Simmons, retiring president of the Association. Mr. Bartlett was requested to make the presentation because Mr. Simmons has been an employee of the Bartlett firm for 30 years.

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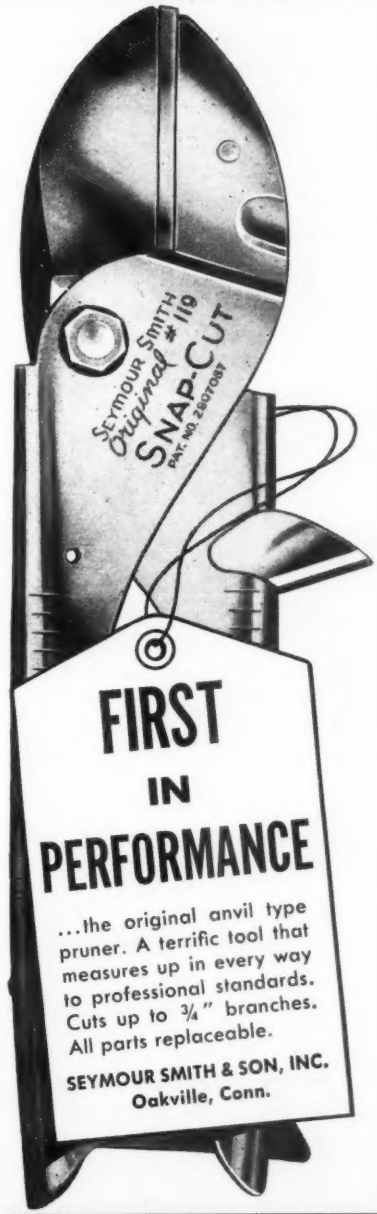

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CAPAC, MICHIGAN

Anthony C. Knof, left, received the "Arborist of the Year Award" at the annual awards dinner of the Arborists Association of New Jersey. Shown with Mr. Knof are Ernest Ricca, Master of Ceremonies, center, and Charles Post, President, right. Mr. Knof, a certified tree expert of Bloomfield, New Jersey, was given the award in recognition of outstanding and unselfish efforts in behalf of his fellow tree men. He is an immediate past president of the Arborists Association and has been instrumental in extensive educational courses offered for those engaged in tree care. Presently he is spear-heading a drive for the passage of the Certified Tree Experts Licensing Law.

H. O. Perkins Retires; Will Write 2 Books

HAROLD O. PERKINS

Harold O. Perkins, associate professor and widely known authority in the field of landscape design at the University of Connecticut, retired recently to write two books: a history of landscape architecture and another on the selection and planting of trees and shrubs.

Mr. Perkins joined the faculty of the College of Agriculture as an instructor in 1932. Since then he has had charge of instruction in landscape design and ornamental horticulture.

Mr. Perkins is the editor of the Connecticut Arborist magazine; trustee of the American Society of Landscape Architects; chairman of publications of the Connecticut Shade Tree Committee; a member of the National Shade Tree Conference; and a member of the American Association of Botanical Gardens and Arboretums.

Kansas Centennial

The 1960 program of the Kansas Arborists Association includes Tree Maintenance—to get all Kansas trees looking their best for the Kansas Centennial in 1961.

Information regarding this project can be obtained from Hugh E. Thompson, secretary, KAA, Department of Entomology, Kansas State University, Manhattan, Kansas; or John Firsching, Board of Park Commissioners, 401 City Building, Wichita, Kansas.

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Radio Isotopes

(continued from Page 8)

Determinations of the extent and functions of natural root grafts clarified in part, the survival and persistence of suppressed trees, the increased growth of the trees remaining after a partial thinning, the longevity of certain stumps, and the vigor of many stump sprouts.

In oak wilt investigations, radioactive isotopes opened the way for studying certain host reactions to fungus invasion, the basic reasons for symptom development, and the manner in which the casual fungus spread from an infected tree to neighboring trees. Doubtless many of these findings may be helpful with other serious vascular wilts of forest trees.

[1] Much of the material presented as an introduction has been condensed from the references listed, especially that by Comar.

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Dr. Ray Allen is shown presenting a citation to Thomas P. Reilly of Danville, New York at the American Horticultural Council Congress in Rochester. Mr. Reilly received the citation for his pioneer and development work in foliar feeding. Mr. Reilly's achievements in the development, perfection and application of foliar feeding covers more than 50 years of work in all parts of America.

2 Horticultural Groups Merge; Officers Named

Merging of the American Horticultural Council and the American Horticultural Society has been consummated. The name of American Horticultural Society was selected for the combined organization.

Officers elected to serve for the coming year are: Dr. Richard P. White, Washington, D. C., president; Donald Wyman, Jamaica Plains, Mass., first vice president; and Stuart Armstrong, Washington, D. C., second vice president.

The American Horticultural Council functioned for a period of fourteen years as a federation of more than 120 organizations and societies. On the other hand, the original American Horticultural Society was basically a direct membership organization of about 5,000 individuals with a few affiliated associations and societies. It is expected that the combined efforts and facilities of both organizations will better serve all horticulture in the United States.

National Arbor Day – Last Friday In April

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Wandering Arborist

(continued from Page 14)

sight to behold. A rich, bronzy, yellow and with the typical peeling cherry bark it is worth having. But the nice foliage, very symmetrical round head and racemes of white flowers make it an ornamental that would be a lovely thing, but it would be particularly priceless in the colder states. It is indigenous to Manchuria and Korea and is hardy in Zone 2. A fine small street tree for Wisconsin and Minnesota where not too many such trees are available.

Prunus Maacki, the Amur Chokecherry. A fine specimen of this extremely hardy (Zone 2) little decorative tree at Wisley Gardens.

I had made a return reservation on the Pan-American jet, flight 101 the President Special, for Saturday at 11 a. m. In the meantime I had made an appointment with Mr. Harold Skinner to take a tour of some of the parks in the London County Council jurisdiction. Met Mr. Skinner at Waterloo Station and we went out to Kenwod Park, Holland House and Battersea Park. On the train in from Woking to Waterloo I had noticed a tree with the most golden foliage I had ever seen. The tree had a nice round head but it was too far from the train to identify, although it did have a familiar look. I asked Mr. Skinner about the tree, and if it could be a *Box-Elder*. It was — Acer negundo aureum, the Golden *Box-Elder*. You might not think much of a Box-Elder—who does—and you might not think much of foliage other than green, but if you appreciate color you would most certainly be completely captivated by the rich true golden color of this foliage. I like golden foliage and this I must have—in fact now I have it. Later at Kenwood Park we saw a small tree. It was crowded but the foliage color was there, and closeup it was just as rich as it had appeared from the train.

An interesting tree in Battersea Park was a *Weeping European Ash* (Fraxinus excelsior pendula). This tree had de-

(continued on Page 26)

The 300 year old White Hart Inn at Chobham, England.

Fraxinus Excelsior Pendula. The double headed specimen in Battersea Park, London.

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Bald Cypress

A row of young Bald Cypress trees, near the edge of the water at the east shore of McGinnis Slough in our Palos forest preserves, are thriving altho they are hundreds of miles north of their natural range. The Bald Cypress is so-named to distinguish it from the evergreen true cypresses in other parts of the world. Each autumn its leaves turn brown and are shed, along with most of the smaller twigs.

Only three other members of the cone-bearing tree families are bare in winter; the native Tamarack or American Larch, the European Larch, and the Metasequoia or Dawn Redwood native in China. The tamarack reaches the southern limit of its range in northern Indiana and northeastern Illinois. The bald cypress extends only as far north as southern Illinois and southern Indiana.

Bald cypress used to be the dominant tree in coastal swamps and river bottomlands from Delaware to Florida to Texas and up the Mississippi valley to Cairo and the Wabash River. Those cypress swamps were awesome places—silent, weird and treacherous with gnome-like "knees" rising above the dark brown water which was never more than dappled with sunlight filtering thru the leafy canopy far above. In the south the trees were festooned with funeral streams of Spanish moss. Now cypress is on its way out as a timber crop because of excessive cutting and drainage of the swamp lands. Most of the remaining fine stands are in South Carolina and Florida.

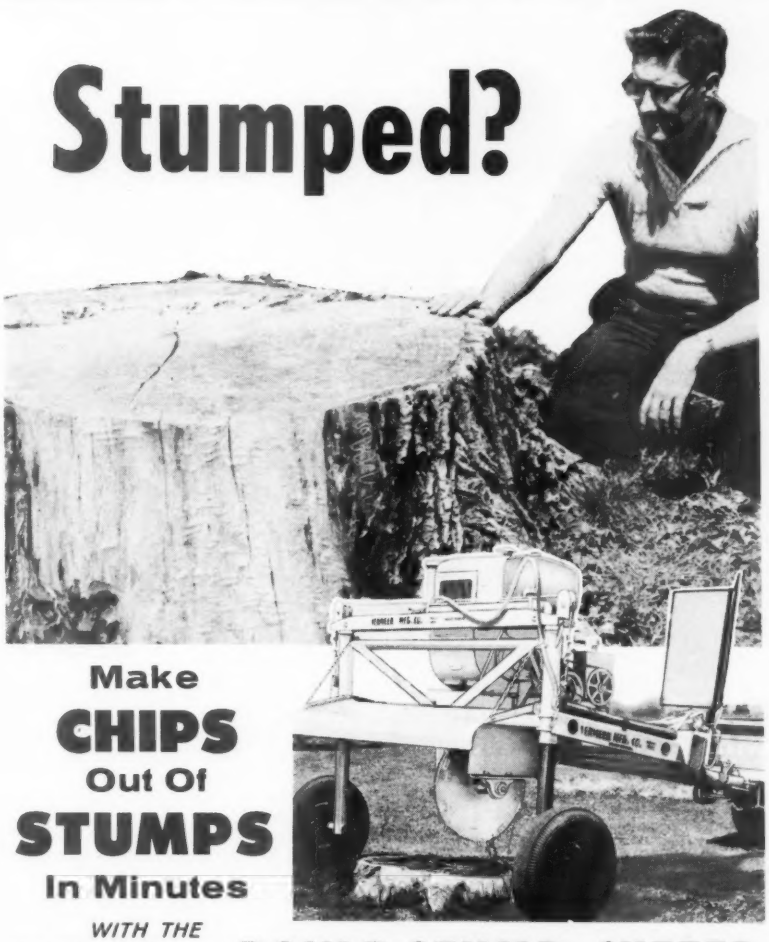
Cypress will do well on land but best in stagnant water. Mature trees may be 120 or even 150 feet tall, with a trunk diameter of from 3 to 5 feet above a flaring buttressed base. Some trees, over 1000 years old, had trunk diameters of 12 feet or more. Long snake-like roots extend far out from the swollen base to give the tree support in soft swamp mud. The cypress is unique because its many submerged roots send up spongy or hollow woody cones, called "knees," which usually reach to high-water level — often several feet — and these are supposed to furnish air to the roots, as well as additional anchorage for the trees. They do not form when a cypress grows on dry land.

The pollen-bearing flowers are in purplish tassel-like clusters from 3 to 6 inches long. The female flowers are followed by cones that look like little one-inch woody balls covered with loosely fitting scales.

Cypress has been called "The Wood Eternal" because of its exceptional durability in soil or water or when exposed to the weather. It is in great demand for water tanks, silos, boats,

(continued on Page 26)

Stumped?



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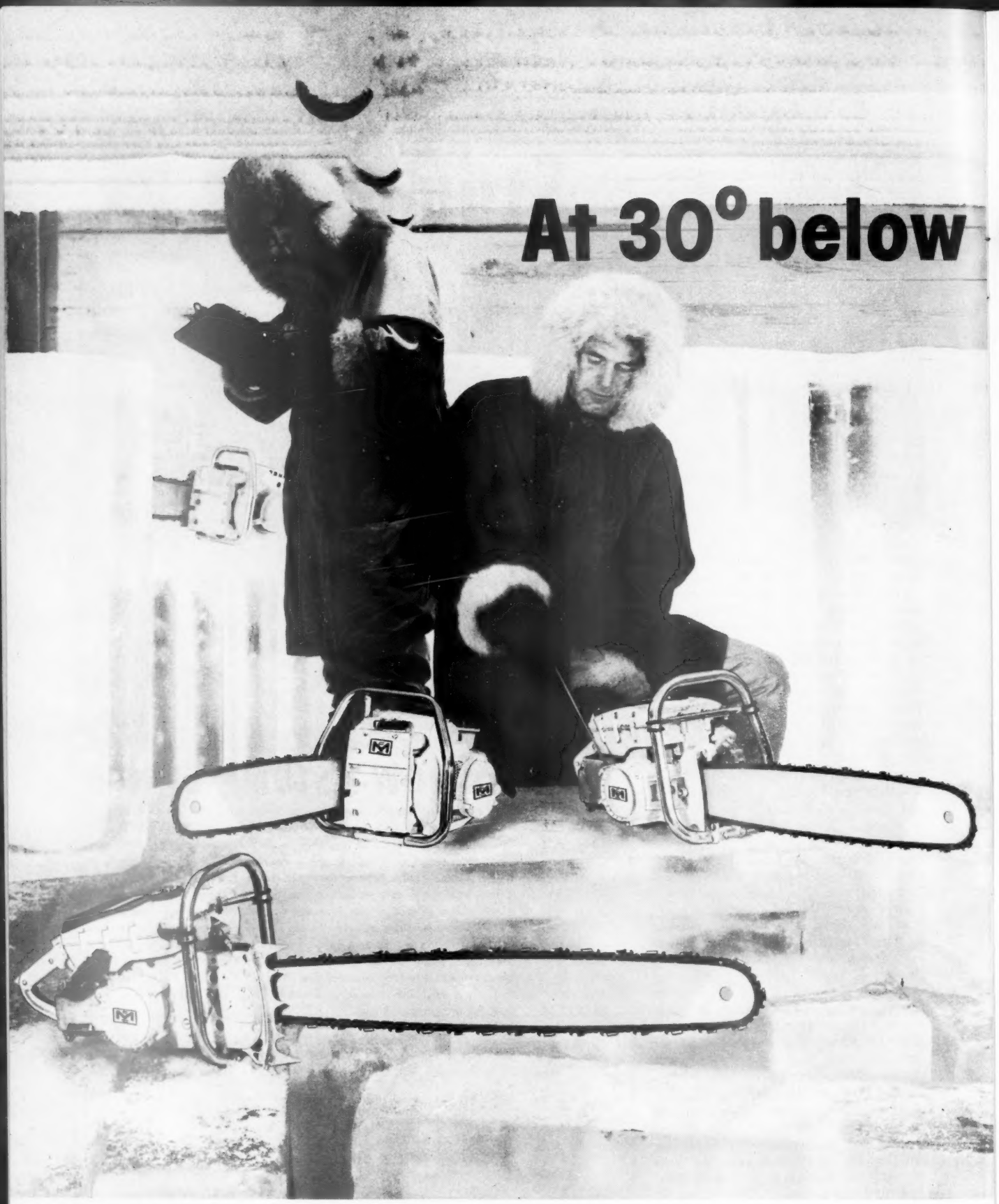

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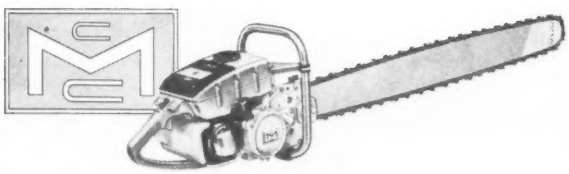

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The Wandering Arborist back at the Rancho with a handful of fine English pipes, tweed hats, Dutch shoes and empty pockets.

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Wandering Arborist

(continued from Page 22)

veloped a second head about 18 feet above the first one (see cut).

This had been a glorious week for weather. It was bright, warm and clear, and it was going to be an ordeal to tear myself away from this charming country, but Saturday morning, May 16th, I bid my gracious hosts, the Chasemores, goodbye. Their son Tony drove me to London Airport On the way however I couldn't resist a last few pictures. A street not far from the airport was planted with *Prunus pissardi, Goldenchain* and *Pauls Scarlet Hawthorns.* It was lovely. The Prunus were spaced about 100 feet apart and staggered. In between each was a *Pauls* and a Goldenchain, each in bloom. Someone with a flair for the unusual had done a job I loved.

The jet zoomed off on time—6 a. m. Olmsted Falls time. Just 13 hours later I was having dinner at the Lamplighter Inn at Olmsted Falls. Although I must say I was so darn fagged out that every time I took a knifefull of peas I almost stabbed myself in the eye.

It was a glorious trip for the Wandering Arborist and the anticipation of other journeys to these beautiful European cities and countries burns fiercely in my heart. The fascination these countries hold is strangling, you must return—but most of all I love their beautiful trees and the skill and imagination with which they use them. I devoutly pray that this penchant for the unusual and the beautiful will soon be transplanted to our otherwise rich land. It would be appreciated—no one could be that blind.

(The End)

Bald Cypress

(continued from Page 23)

shingles, greenhouse frames, kitchen drainboards and coffins—to name just a few uses. The wood is pale brown or reddish, straight-grained and easily worked. The tree is remarkably free from insect pests but is subject to a heart-rot fungus that fills the wood with holes. Such logs produce the "pecky" cypress that is so much in demand for panelling "rumpus rooms," dens and such.

The Montezuma cypresses of Mexico are also survivors of those that covered the northern hemisphere, then tropical, in the Age of Dinosaurs. There are a few that, along with the Sequoias of California, may be the oldest living things on earth — 3000 or more years old. One of the most famous is the "Tree of the Sorrowful Night," under which Cortes wept in 1520 after he had lost most of his men in battle.

The cypress has always been a symbol of sadness and mourning.

Roberts Mann, Nature Bulletin

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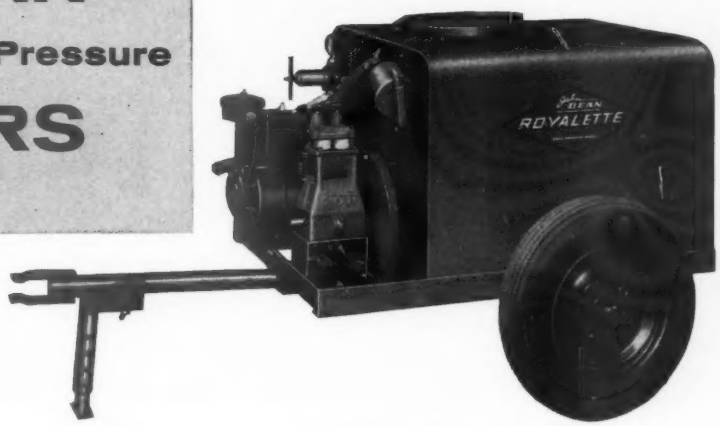

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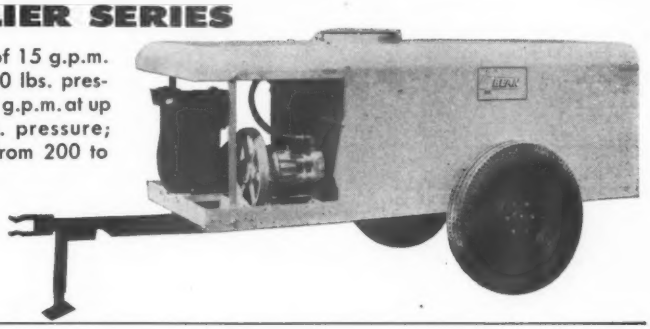

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Officers of the Plant Propagators Society and newly elected members of the executive committee are: left to right (rear): Dr. John Mahlstede, editor; Dr. Kenneth Reisch, secretary-treasurer; Fred Galle and Dr. Sidney Waxman, executive committee members; (front) Roy Nordine, past president; Harvey Templeton, Jr., president; and Martin Van Hof, vice president. The men were elected at the group's ninth annual meeting in Philadelphia, Pa. A record attendance of 227 was recorded for the three-day meeting. The 1960 meeting will be held in Cleveland, Ohio, December 1-3.

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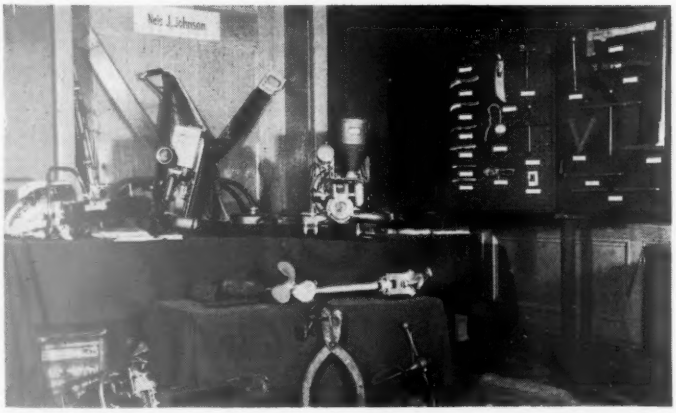

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Insect Pests

(continued from Page 7)

The crawlers emerge from under the old female and migrate out from the branches and twigs to the undersides of the leaves. They remain on the leaves as crawlers all summer until just before leaf drop in the fall. Then they migrate back to the bark on the twigs and branches where they find a protected place to spend the winter.

Twenty years ago dormant oil sprays were recommended to control European elm scale. Today, this method of control is hardly used. Experiences in the 1940's and early 1950's showed dormant sprays were not effective against large populations. In the past three years we have been carrying on experimental control studies employing summer sprays against the crawlers. Many of the insecticides applied gave little or no control. On trees sprayed with dieldrin and endrin, the populations exceeded those on unsprayed trees. Other insecticides, including DDT, malathion, Sevin, Diazanon and Guthion in small dosages produced only a slight reduction in the population. However, in 1959 three insecticides gave 100 per cent control when applied once on July 10. These were two pounds of Sevin 50% wettable powder, one-half gallon of Diazamon 25% emuslifiable concentrate and a mixture of three gallons of DDT 25% emulsifiable concentrate plus one quart of malathion 57% emulsifiable concentrate.

Borer Control

Many requests for experimental work on the control of borers have been received. Even though borers are mentioned frequently as a serious problem in shade trees, infestations extensive enough to serve as experimental plots have not been found. Nevertheless, in a summary of this type, there are several points about borers that should be mentioned. First, most of the borers attacking shade trees are larvae belonging to three beetle families, two or three moth families and one wasp family.

By far the great majority of the borers are either round-headed borers or flat-headed borers. These beetle larvae are legless, as are most borers. The most obvious difference between them is the wide, flat region of the body from which the flat-headed borers get their name. Actually, it is not the head that is enlarged, but the thorax. The adult beetles of both families feed after emergence upon the leaves, then fly to the bark on the trunks and main branches where they gnaw shallow pits in which eggs are placed. Upon hatching, the young larvae tunnel into the bark and with few exceptions, the greater part of the larval stage is spent there. Just before pupating, the mature larva gnaws out a pupal cell in the sapwood. A few roundheaded borers with a two-year life cycle tunnel

through the sapwood during the latter part of their larval period and then tunnel to the outer rings to construct pupal cells. At emergence time, the new adults tunnel straight out, through the bark.

The important lepidopterous borers are in two families. The dogwood borer and the lilac borer are both members of the clearwing moth family. Adults of both species emerge early in the spring to lay eggs on the host plant. The larvae tunnel into the sapwood causing the host to wilt, die and sometimes break over. In the northern part of the Midwestern region there is only one generation each year but in the southern areas there is probably a partial second generation.

The largest of the borers is the carpenterworm. A mature larva may be more than one half inch in diameter and three inches long. The female moth lays eggs in the crevices of the bark. Upon hatching, the young borer tunnels in through the bark, sapwood and heartwood to the pith and then tunnels vertically. As the larva grows it keeps working the tunnel to make it larger and to keep the cambrium of the host tree from healing the wound. It takes three years to complete its life cycle. Pupation takes place in a cell in the wood, but the pupa retains mobility so it can wriggle to the mouth of the tunnel through which the adult moth emerges. Each of these borers leaves a large hole in the bark and sapwood through which pathogenic and rot-fungi gain entrance to the sapwood and heartwood.

In general, borers are more likely to attack dying or weakened trees rather than vigorous healthy trees. They are usually no problem unless populations have grown too large in poor trees. Poor trees should be destroyed. For additional protection, heavy applications of DDT and dieldrin applied before the adults oviposit will keep most borers out of trees. The time of adult emergence occurs over such a wide range it is difficult to set one time of application. Three sprays applied once each month during May, June and July will keep trees quite free of borers.

Finally, spraying to control insects attacking shade trees is frequently a preventive measure. Even when it is not, sprays must be applied early in the period of attack to achieve satisfactory control. In fact, with the many insecticides available today, timing of application is probably just as important as the material applied.

National Arbor Day – Last Friday In April

Be Safe

I love all trees, I like to climb,
With my saw, saddle, and hand line,
But I never take a chance at all,
Playing safe may avoid a fall.
Check your ladder and rope each day,
You know you're being safe that way.
Stay away from that electric wire,
Death means a permanent retire.
When dropping a limb, call look out below,
Don't kill the foreman, he's not your foe.
Be careful throughout the entire day,
Time in the hospital isn't worth the stay.
So be like me be careful please,
And you'll live long like the trees.

For Your Calendar

International Conference on Forest Tree Growth, The University of Arizona, Tucson, Arizona, April 11, 12, 13.

Western Chapter, National Shade Tree Conference, Lafayette Hotel, Long Beach, California, May 8, 9, 10, 11.

Kansas Arborists Association Field Day, Gage Park, Topeka, Kansas, June 17.

American Association of Nurserymen, Netherland Hilton Hotel, Cincinnati, Ohio. July 17, 18, 19, 20.

National! Shade Tree Conference, Statler Hotel, Boston, Massachusetts, August 14, 15, 16, 17, 18, 19.

Nineteenth Annual short course on Roadside Development, Columbus, Ohio, October 4, 5, 6, 7.

85th annual meeting, American Forestry Association, Edgewater Gulf Hotel, Edgewater Park, Mississippi, October 17, 18, 19.

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Authors and Books

The following books may be ordered from TREES Magazine, 7621 Lewis Road Olmsted Falls 38 Ohio.

DR. HUGH E. THOMPSON,

author of Insect Pests of Shade Trees and Ornamentals In The Midwest, Page 6

Dr. Thompson was born in Newport, Rhode Island. He received his B. S. degree in agriculture from Rhode Island State College in 1947 and was awarded the degree of Doctor of Philosophy from Cornell University in 1953. He is a World War 2 veteran.

Dr. Thompson has served as assistant entomologist in the Rhode Island Department of Agriculture; graduate assistant in entomology at Cornell University; and as an entomologist with the Peynnsylvania Department of Agriculture. In October 1956 he accepted his present position at Kansas State College, Manhattan, Kansas, where he is assistant professor of entomology in the Kansas Agricultural Experimentation Station and does research on insects attacking shade trees and ornamentals. He is especially interested in the role of insects in the spread of oak wilt disease.

* * * *

Dr. James E. Kuntz prepared the manu-cript, *"The Use of Radio Active Isotopes In Tree Disease Research,"* page 8, which includes work by several of his associates.

Dr. Kuntz received a B.A. degree at Ohio Wesleyan University in 1941; a M.A. degree at the University of Wisconsin in 1942; and his Ph.D. in plant pathology from the University of Wisconsin in 1945. He was formerly a plant breeder and pathologist for the Wisconsin Cabbage Seed Co. during 1945-1946.

Dr. Kuntz has been an associate professor of plant pathology at the University of Wisconsin since 1946. His main interests are vegetable diseases and control; forest tree disease and control; and breeding of trees for disease resistance.

Others whose work is included in this paper are:

DR. ROBERT H. BURRIS, professor in bio-chemistry at the University of Wisconsin. His major interests have been respiration in plants, photosynthesis, and nitrogen fixation.

DR. CARL H. BECKMAN, plant pathologist for the United Fruit Co., formerly project associate at the University of Wisconsin. His main interests have been diseases of trees, shrubs, and bananas with emphasis on wilt diseases.

DR. JOHN G. BERBEE, assistant professor of plant pathology at the University of Wisconsin. He is mainly interested in diseases of forest trees and breeding for disease resistance.

DR. CHARLES R. DRAKE, plant pathologist, Crop Research Div., U.S.D.A., Blacksburg, Va. His major interests have been diseases of forest trees and pathological and physiological problems of forage legumes.

DR. JOHN R. PARMETER, assistant professor of plant pathology, University of California. His major interest is diseases of forest trees.

DR. A. JOYCE RICKER, professor in plant pathology, University of Wisconsin. His main interests have been bacterial diseases of plants, pathological growth, diseases of forest trees, and breeding disease resistant trees.

* * * *

GARDEN DESIGN ILLUSTRATED by John A. and Carol L. Grant. University of Washington Press, Seattle 5, Washington. 160 pgs., illus., $5.75.

This book is the outgrowth of Mr. Grant's experience as a landscape architect, lecturer, and gardener. With the collaboration of his wife, he has written a work that presents a fresh, original approach to the whole subject of garden design.

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In down-to-earth language the authors explain and amplify every point discussed. Among the many matters treated at length are the following: pictorial effects, scale, plant material, texture, the size, shape and pattern of foliage, cultural requirements, color, drifts, climate and contours.

Excellent material is included regarding planned spacing of trees. Also, a point that cannot be overemphasized is stated on pgs. 43-44: "Finally, remember that before you choose a tree you must find out how big it will grow. Too often we see the tragedy of a tree that has outgrown its position and has been brutally cut back until it has lost all its natural grace and charm. Decide just how large you want a tree to be and then choose one that will grow to that size but will not exceed it." Garden Design Illustrated is a welcome addition to our library.

* * * *

DESIGNS FOR OUTDOOR LIVING, First Edition, by John Burton Brimer. Doubleday and Company, Inc., Garden City, N. Y. 420 pgs., illus. $3.95.

This book has much valuable information regarding outdoor building projects that will enhance the home grounds; however, trees are mentioned only as a complement to walls, terraces, etc. and then spoken of as though their only characteristic was shade.

It is admirable that the author beseeches his readers not to cut down a good tree merely because it stands in the way of their garden wall site—he gives instructions how to retain such trees.

In other chapters he illustrates the building of tree houses and gives alternatives for the uses of dead trees (remove weak branches and plant vines on trunk, or use the trunk as a stand for an awning of vine covered trellises, etc.)

We would like to see the author add some live trees to his book if and when it is revised.

* * * *

SUCCULENT PLANTS, Second Edition, by A. Bertrand. Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. 113 pgs., illus., $6.00.

The emphasis here is on succulent plants in general cultivation or those which the author believes deserve to be better known.

Succulents are found in about 40 plant families, but this book is limited to a study of those of a horticultural interest either by reason of their beauty or their extraordinary appearance. There are chapters regarding cultivation, propagation and enemies of these plants.

The author manages to explain how to recognize families, genera, and species to which the plants belong without a too technical treatment.

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